



Minnesota Ag News – Chemical Use

Soybeans: Fall 2020

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The National Agricultural Statistics Service (NASS) Agricultural Chemical Use Program is the U.S. Department of Agriculture's official source of statistics about on-farm and post-harvest fertilizer and pesticide use and pest management practices.

In the fall of 2020, NASS collected data for the 2020 crop year, the one-year period beginning after the 2019 harvest and ending after the 2020 harvest, about chemical use and pest management practices used on soybean production. The data was collected as part of the Agricultural Resource Management Survey (ARMS) and the results are presented here.

The 2020 Agricultural Chemical Use Survey of soybean producers collected data about fertilizer and pesticide use as well as pest management practices in growing soybeans.

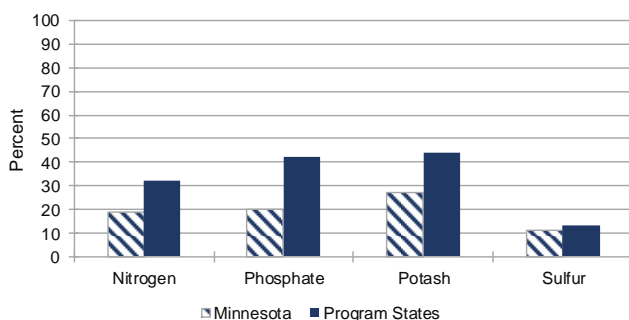
Fertilizer Use

Fertilizer refers to a soil-enriching input that contains one or more plant nutrients, primarily nitrogen (N), phosphate (P₂O₅), and potash (K₂O). Of the three primary macronutrients, potash was the most widely used on soybean acres planted in Minnesota. Farmers applied potash to 27% of planted acres at an average rate of 71 pounds per acre per year. Macronutrients nitrogen and phosphate were applied at an average rate of 13 and 37 pounds per acre per year, respectively. The secondary macronutrient, sulfur, was applied to 11% of acres planted to soybeans.

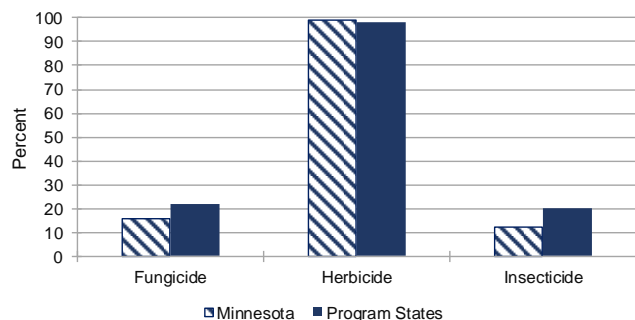
Pesticide Use

The pesticide active ingredients used on soybeans are classified in this report as herbicides (targeting weeds), insecticides (targeting insects), and fungicides (targeting fungal disease). Herbicide active ingredients were applied to 99% of the soybean acres planted. Sulfentrazone was the most widely used active ingredient on soybean acres, but s-metolachlor was the active ingredient with the greatest total amount applied. Fungicides and insecticides were applied to 16% and 12% of soybean acres planted in Minnesota.

**Fertilizers, Percent of Soybean Planted Acres Treated
Minnesota and Program States: 2020**



**Pesticides, Percent of Soybean Planted Acres Treated
Minnesota and Program States: 2020**



Fertilizer Use On Soybeans – Minnesota and Program States: 2020

Active ingredient	Minnesota			Program states ¹		
	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)
Nitrogen	19	13	18,200	32	17	449,900
Phosphate	20	37	53,200	42	55	1,878,300
Potash	27	71	139,600	44	89	3,150,500
Sulfur	11	11	8,800	13	13	137,800

Pesticide Use On Soybeans – Minnesota and Program States: 2020

Active ingredient	Minnesota			Program states ¹		
	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)
Fungicide:						
Azoxystrobin	3	0.094	24	7	0.113	597
Total ²	16		153	22		3,550
Herbicide ³:						
2, 4-D, choline salt	13	0.614	607	10	0.704	5,614
Acetochlor	13	1.035	1,009	9	1.094	8,070
Clethodim	12	0.068	58	17	0.119	1,597
Cloransulam-methyl	14	0.018	19	7	0.026	152
Dicamba, digly. salt	17	0.533	653	18	0.560	8,299
Fluazifop-p-butyl	16	0.074	87	4	0.089	307
Fomesafen sodium	29	0.241	523	13	0.258	2,629
Glufosinate-ammonium	26	0.555	1,074	17	0.545	7,225
Glyphosate	19	1.033	1,451	7	1.112	6,538
Glyphosate dim. salt	12	0.630	554	9	0.753	5,584
Glyphosate iso. salt	26	0.982	1,893	38	1.079	32,569
Glyphosate pot. salt	18	1.324	1,793	40	1.556	50,180
Imazethapyr	14	0.074	76	13	0.053	528
Metribuzin	13	0.189	176	18	0.274	4,049
S-Metolachlor	20	1.304	1,898	19	1.307	20,098
Sulfentrazone	37	0.248	670	21	0.200	3,362
Total ²	99		13,924	98		191,190
Insecticide:						
Chlorpyrifos	6	0.530	249	1	0.494	425
Lambda-cyhalothrin	6	0.029	13	8	0.027	180
Total ²	12		272	20		2,639

¹ The 19 program states surveyed about soybeans in the 2020 ARMS were Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, Pennsylvania, South Dakota, Tennessee, and Wisconsin.

² Total Fungicide, Herbicide, and Insecticide includes pesticides that are not listed in this table.

³ Given the large number of herbicides applied to row crops, active ingredients that were applied to less than 10 percent of planted acres in Minnesota are not included in this table but can be found at www.nass.usda.gov.

Scouting for weeds was the top pest management practice on **soybean** acreage.

Pest Management Practices on Soybeans – Minnesota and Program States: 2020

	Minnesota		Program states	
	% of area planted	% of operations	% of area planted	% of operations
Avoidance				
Crop or plant variety chosen for specific pest resistance	47	45	58	57
Planting locations planned to avoid cross infestation of pests	18	21	22	21
Planting or harvesting dates adjusted	16	14	19	19
Rotated crops during past 3 years	95	95	87	86
Row spacing, plant density, or row directions adjusted	22	19	25	26
Monitoring				
Diagnostic laboratory services used for pest detection via soil or plant tissue analysis	18	11	7	6
Field mapping data used to assist decisions	38	29	25	21
Scouted-				
established process used	37	34	22	19
for pests due to a pest advisory warning	11	11	8	8
for pests due to a pest development model	21	20	9	9
for pests or beneficial organisms-not scouted	1	2	5	7
for pests or beneficial organism by conducting general observations while performing routine tasks	19	20	27	30
for pests or beneficial organism by deliberately going to the crop acres or growing areas	80	78	68	63
Scouted for diseases	80	81	81	76
by employee	0	0	2	1
by farm supply company or chemical dealer	14	12	13	14
by independent crop consultant or commercial scout	17	17	18	16
by operator, partner, or family member	69	70	67	69
Scouted for insects & mites	90	89	83	79
by employee	0	0	2	1
by farm supply company or chemical dealer	12	11	13	14
by independent crop consultant or commercial scout	15	16	18	16
by operator, partner, or family member	72	73	67	69
Scouted for weeds	99	98	94	91
by employee	0	0	2	1
by farm supply company or chemical dealer	12	11	12	13
by independent crop consultant or commercial scout	15	15	16	14
by operator, partner, or family member	73	74	70	72
Weather data used to assist decisions	79	78	76	74
Written or electronic records kept to track pest activity	70	64	52	45
Prevention				
Beneficial insect or vertebrate habitat maintained	15	14	14	14
Crop residues removed or burned down	2	2	15	17
Equipment & implements cleaned after field work to reduce spread of pests	62	61	52	49
Field edges, ditches, or fence lines were chopped, sprayed, mowed, plowed, or burned	54	52	56	51
Field left fallow previous year to manage insects	0	0	1	1
Flamer used to kill weeds	2	1	1	1
No-till or minimum-till used	32	43	69	73
Plowed down crop residue using conventional tillage	46	40	25	23
Seed treated for insect or disease control after purchase	28	25	44	39
Water management practices used	2	4	7	6
Suppression				
Beneficial organisms applied or released	1	1	2	2
Biological pesticides applied	4	3	4	3
Buffer strips or border rows maintained to isolate organic from non-organic crops	9	12	12	12
Floral lures, attractants, repellants, pheromone traps, or biological pest controls used	0	0	(Z)	(Z)
Ground covers, mulches, or other physical barriers maintained	39	42	48	47
Pesticides with different mechanisms of action to keep pest from becoming resistant to pesticides	51	47	53	49
Scouting data compared to published information to assist decisions	43	36	34	30
Trap crop grown to manage insects	0	0	(Z)	(Z)

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(Z) Less than half the rounding unit.

Complete data from the Agricultural Chemical Use survey are available on the NASS website at

[http://www.nass.usda.gov/Surveys/Guide to NASS Surveys/Chemical Use/](http://www.nass.usda.gov/Surveys/Guide%20to%20NASS%20Surveys/Chemical%20Use/)